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THE INCREASE IN INDUSTRIAL ACCIDENTS.

By Henry J. Harris, Ph.D., *of the Library of Congress.*

Introduction.

In a progressive industrial country, does the number of accidents to workmen during employment tend to increase constantly from year to year?

On *a priori* grounds, it would seem reasonable to expect such an increase. The constant increase in the size of the industrial plants, the greater number of workmen who must be employed on team work with the consequent greater opportunities for errors and mistakes; the greater size, greater power, and higher speed of the machinery and appliances used are factors which would inevitably tend to produce accidents in a greater number as industrial processes are improved. On the other hand there is a strong opposing tendency in the fact that these risks are becoming more and more the subject of careful study, and with the improvement in processes and appliances a corresponding improvement in protective measures is taking place.

It is of interest in this connection to refer to the fact that the special report of the German insurance office on accidents for the year 1907 states that an increasing accident rate is an unfortunate but inevitable feature of modern industry, while according to the special British report on accidents, "there has probably been little, if any, increase in the accident risk during recent years." In view of these conflicting opinions, it will be worth while to discuss the general aspects of the accident returns in the three countries which have published information on this point.

Statistics of industrial accidents may be derived from two sources; the factory inspection department and the compensation system. Of the two, the data supplied by the latter are usually more accurate and more detailed, especially in countries like Germany and Austria where there is a central office with the special duty of observing the operation of the compensation system. In Great Britain, a department committee has compared the returns of the factory inspection service with the reports of the compensation system and concludes that the inspection service has secured information of practically all accidents in British factories.

The available statistical information on the subject of industrial accidents in recent years has greatly increased in quantity and improved in accuracy. In spite of this, such data must be used with caution; it is obvious that when a compensation law offers an immediate pecuniary relief to the injured workman, he will be much more likely to report his accident than if he were compelled to bring suit under an employers' liability law and prove according to the rules of legal evidence that the employer or his representative was at fault. Since the only statistical data on this subject worth considering are those compiled in countries with compensation systems and since such systems always subject the injured workman to the temptation of exploiting the fund, a certain amount of care must be exercised especially in regard to the figures for the first ten years of the operation of the compensation system. Within that period it is reasonable to assume that such factors have become fairly constant, or at least well defined, and that an increase in the accident rate thereafter will be, as a rule, the result of other causes.

The term "accident" is also in need of definition; in the following pages it is used in the sense of an injury sustained in the course of the employment and having a causal connection with it. Four classes of accident are usually distinguished: (1) fatal accidents; (2) accidents causing disability which is permanent and total, preventing the injured workman from earning a livelihood; (3) accidents causing disability which is permanent but partial, that is, reducing his earning capacity but not entirely destroying it; and (4) accidents causing disability from which the injured workman recovers within a period specified in the law.

GERMANY.

The statistics of industrial accidents in Germany reproduced in the following pages are derived from material published by the Imperial Insurance Office (*Reichs-Versicherungsamt*), principally in its monthly bulletin, "Amtliche Nachrichten des Reichs-Versicherungsamts." The January number of each year contains a report on the operations of the accident and invalidity organizations of the imperial insurance system for the year but one previous to the date of the bulletin. Every ten years the imperial insurance office makes a special study of the accidents of a selected year, in which the data are presented in considerable detail; such special studies of accidents in industries have been made for the years 1887, 1897, and 1907 and have been published in the monthly bulletin. Similar special studies have been made of accidents in agricultural establishments for the years 1891 and 1901. The first of these special studies, however, was made in 1881 in connection with the plans for the accident insurance law of 1884. The years to which these studies relate and the volumes in which they appeared are as follows:

1881, Statistik des Deutschen Reichs, Erste Reihe, Band 53, Ergänzungsheft.

1887, Amtliche Nachrichten des Reichs-Versicherungsamts 1890, p. 199 et seq.

1897, Amtliche Nachrichten des Reichs-Versicherungsamts 1889 Beiheft; 1900 Beiheft 1, 2. Gewerbe-Unfallstatistik für das Jahr 1897.

1907, Amtliche Nachrichten des Reichs-Versicherungsamts, 1910, I Beiheft, I–III Teil. Gewerbe-Unfallstatistik für das Jahr 1907.

It should be kept in mind that the data in the following tables refer to accidents compensated and not to accidents reported; also that the accidents of any one year are the accidents for which compensation was granted for the first time in that year, though the accident itself may have occurred in a previous year or even at an earlier time.

The most important feature of the data is that they include only the accidents resulting in death or disability which lasted longer than thirteen weeks. The German figures include, therefore, only the serious accidents. The accidents which may have been reported but are not included consist of first, those causing disability of less than thirteen weeks (which are compensated under the sickness insurance system), and second, accidents reported but which the administrative bodies have decided are not industrial accidents within the meaning of the law.

It will be remembered that the German accident insurance system is administered by a number of employers' mutual associations, each association covering a specified industry or group of industries. For convenience of administration, some of these associations include a number of diversified industries which did not employ a sufficiently large body of employees to permit of a separate organization; thus dairying, distilling, and starch manufacturing are grouped into one association (association number 38). The miscellaneous food products association (number 36) does not include the flour or sugar industries, but practically all the other food industries. The classification of accidents by industries given in the following tables is based on the groups included in these associations, and this system accounts for the fact that the classification of the industries is in some respects not so logical as we are accustomed to find in other German statistical studies.

To show how comprehensive the German accident insurance system is, the following table compares the number of persons insured with the total population:

TABLE I.

NUMBER OF PERSONS (INCLUDING DUPLICATIONS) INSURED AGAINST ACCIDENT, COMPARED WITH THE POPULATION OF THE EMPIRE, BY SEX, FOR SPECIFIED YEARS.

[Source: Statistik der Arbeiterversicherung des Deutschen Reichs, 1885 to 1906.]

Year.	Population of the Empire.			Total Number of Persons Insured (Estimated).	Number of Persons Insured per 1,000 Population.	Number of Persons Insured per 1,000—		
	Male.	Female.	Total.			Male Wage-earners.	Female Wage-earners.	Total Wage-earners.
1885	22,864,000	23,843,000	46,707,000	3,251,000	70	330	173	287
1888	23,592,000	24,576,000	48,168,000	10,353,000	215	(*a*)	(*a*)	(*a*)
1895	25,523,000	26,478,000	52,001,000	16,889,000	325	1,322	1,238	1,297
1906	30,149,000	31,028,000	61,177,000	19,227,000	314	1,273	1,193	1,250
1908	....	....	(*b*) 63,125,000	(*b*) 27,000,000	(*a*)	(*a*)	(*a*)	(*a*)

The general accident rate in Germany is shown in the official reports, both for the average number of insured persons during the year and for the number of "full-time workers, *i. e.*, 300 day workers. The number of "full-time" workers is ascertained by dividing the number of days or the number of shifts worked, by 300. Tables II and III show the absolute figures and the relative figures for the accidents compensated in the period 1885 to 1908.

(*a*) Not reported. (*b*) Estimate of Reichs-Arbeitsblatt.

TABLE II.

NUMBER OF ACCIDENTS TO INSURED PERSONS, AND RESULTS OF INJURY, 1885–1908, IN GERMANY.

[Source: Amtliche Nachrichten des Reichs-Versicherungsamts, 1887 to 1910.]

Year.	Average Number of Persons Insured.	Number of Persons Compensated for the First Time.				
		Accidents Resulting in—				Total.
		Death.	Permanent Disability.		Temporary Disability of over 13 weeks.	
			Total.	Partial.		
Industrial Accident Associations. (*a*)						
1885 (*b*)	2,986,248	226	....	....	....	226
1886	3,473,435	2,422	1,548	3,780	1,973	9,723
1887	3,861,560	2,956	2,827	8,126	2,061	15,970
1888	4,320,663	2,990	1,899	10,344	3,755	18,988
1889	4,742,548	3,457	2,357	12,998	3,958	22,770
1890	4,926,672	3,686	1,896	16,399	5,040	27,021
1891	5,093,412	3,716	1,604	17,790	5,881	28,991
1892	5,078,132	3,382	1,531	18,472	6,061	29,446
1893	5,168,973	3,680	1,397	20,174	6,775	32,026
1894	5,243,965	3,549	887	20,560	8,743	33,739
1895	5,409,218	3,757	818	19,837	10,376	34,788
1896	5,734,680	4,152	618	20,860	14,039	39,669
1897	6,042,618	4,381	680	21,836	16,004	42,901
1898	6,316,834	4,749	568	22,940	17,873	46,130
1899	6,658,571	4,897	610	24,435	20,458	50,400
1900	6,928,894	5,226	616	25,388	21,674	52,904
1901	6,884,076	5,121	625	26,734	24,292	56,772
1902	7,100,537	4,705	644	27,340	25,938	58,627
1903	7,466,484	4,854	642	28,071	28,411	61,978
1904	7,849,120	5,176	629	29,540	31,407	66,752
1905	8,195,732	5,325	583	29,949	33,837	69,694
1906	8,625,500	5,569	587	30,667	35,847	72,670
1907	9,018,367	6,223	586	30,787	39,121	76,717
1908	8,917,772	6,070	582	29,525	39,653	75,830
Agricultural Accident Associations.						
1888	5,576,765	354	43	180	231	808
1889	8,088,698	1,368	260	2,663	2,340	6,631
1890	(*c*)	1,877	438	5,404	4,854	12,573
1891	12,289,415	2,153	644	8,873	7,689	19,359
1892	(*c*)	2,026	785	11,012	9,408	23,231
1893	(*c*)	2,142	770	14,899	9,742	27,553
1894	(*c*)	2,261	560	17,185	12,485	32,491
1895	(*c*)	2,213	571	19,529	15,070	37,383
1896	11,189,071	2,363	623	22,222	17,726	42,934
1897	(*c*)	2,474	544	23,260	19,160	45,438
1898	(*c*)	2,598	332	23,366	21,387	47,683
1899	(*c*)	2,608	440	25,313	22,926	51,287
1900	(*c*)	2,662	511	24,181	22,957	50,311
1901	(*c*)	2,751	568	25,954	26,710	55,983
1902	(*c*)	2,672	541	26,408	28,313	57,934
1903	(*c*)	2,893	604	28,379	30,521	62,397
1904	(*c*)	2,948	668	31,428	30,959	66,003
1905	(*c*)	2,907	610	32,009	30,809	66,335
1906	(*c*)	2,872	593	28,580	29,842	61,887
1907	(*c*)	2,843	507	27,049	32,274	62,673
1908	17,179,000	2,980	371	25,573	32,685	61,609

(*a*) After 1888 including the number of persons who received compensation from accident associations of the building trades and after 1891 from the navigation accident association.

(*b*) For the last three months of the year.

(*c*) Not reported.

TABLE II—*Continued.*

Year.	Average Number of Persons Injured.	Number of Persons Compensated for the First Time.				
		Accidents Resulting in—				Total.
		Death.	Permanent Disability.		Temporary Disability of over 13 weeks.	
			Total.	Partial.		
Public Authorities.						
1885 (*b*)	265,088	42	....	....	....	42
1886	251,878	294	230	181	112	817
1887	259,977	314	339	336	143	1,132
1888	446,250	348	274	573	245	1,440
1889	543,320	435	291	886	436	2,048
1890	604,380	484	374	1,102	484	2,444
1891	632,459	559	347	1,434	519	2,859
1892	646,733	503	348	1,508	618	2,977
1893	460,462	514	340	1,597	699	3,150
1894	658,367	551	337	1,742	759	3,389
1895	690,835	478	317	1,686	875	3,356
1896	681,439	586	306	1,900	1,008	3,800
1897	715,758	561	283	1,982	1,161	3,987
1898	740,108	637	239	2,050	1,284	4,210
1899	756,482	619	276	2,090	1,364	4,349
1900	774,926	679	263	2,140	1,357	4,439
1901	793,565	629	253	2,228	1,471	4,581
1902	793,150	598	250	2,176	1,699	4,723
1903	809,867	623	292	2,323	1,762	5,000
1904	837,834	628	307	2,267	1,716	4,918
1905	857,709	696	294	2,098	2,004	5,092
1906	912,642	700	283	2,100	2,086	5,169
1907	964,589	749	263	2,257	2,044	5,313
1908	977,351	806	207	2,312	2,201	5,526

(*b*) For the last three months of the year.

TABLE III.

NUMBER OF FULL-TIME WORKERS AND NUMBER PER 1,000, FULL-TIME WORKERS INJURED BY ACCIDENTS COMPENSATED FOR THE FIRST TIME IN EACH YEAR OF THE PERIOD 1897-1908 IN GERMANY.

[Source: Amtliche Nachrichten des Reichs-Versicherungsamts, 1899 to 1910.]

Year.	Number of Full-Time Workers.	Number of Injured Persons Compensated for the First Time.	Number per 1,000 Full-Time Workers Compensated for the First Time. Accidents Resulting in—				
			Death.	Permanent Disability.		Temporary Disability of over 13 Weeks.	Total.
				Total.	Partial.		
Industrial Accident Associations:							
1897	5,170,366	41,746	0.82	0.12	4.11	3.02	8.07
1898	5,462,829	44,881	.85	.10	4.09	3.18	8.22
1899	5,781,495	49,175	.83	.10	4.12	3.46	8.51
1900	6,021,856	51,697	.85	.10	4.11	3.52	8.58
1901	6,000,615	55,525	.83	.10	4.36	3.96	9.25
1902	6,226,584	57,244	.73	.10	4.28	4.08	9.19
1903	6,553,514	60,550	.72	.09	4.19	4.24	9.24
1904	6,868,496	65,205	.72	.09	4.20	4.48	9.49
1905	7,159,842	68,360	.72	.08	4.11	4.64	9.55
1906	7,512,728	71,227	.72	.08	4.01	4.67	9.48
1907	7,869,421	75,370	.77	.07	3.85	4.89	9.58
1908	7,868,531	74,581	.76	.07	3.70	4.95	9.48
Government Industrial Establishments and Operations:							
1897	451,853	3,070	1.09	.56	3.54	1.60	6.79
1898	481,277	3,284	1.16	.42	3.46	1.78	6.82
1899	488,725	3,485	1.13	.50	3.61	1.89	7.13
1900	506,040	3,597	1.20	.47	3.60	1.84	7.11
1901	512,797	3,713	1.07	.47	3.68	2.02	7.24
1902	516,245	3,824	1.02	.45	3.63	2.31	7.41
1903	530,579	4,066	1.01	.52	3.77	2.36	7.66
1904	558,042	4,015	1.02	.53	3.52	2.12	7.19
1905	575,320	4,270	1.07	.49	3.15	2.71	7.42
1906	609,297	4,362	1.04	.44	2.97	2.71	7.16
1907	662,211	4,537	1.02	.38	3.00	2.45	6.85
1908	672,070	4,758	1.10	.30	3.07	2.61	7.08

Table II shows the basis for the relative data in Table III. It should be stated that the system of reporting accidents on the basis of the number of full-time (300 day) workers was not begun until 1897.

The relative data are of course the more interesting. The conspicuous fact presented by the tables is that the total accident rate in the insured industrial establishments increased from 8.07 per 1,000 full-time workers in 1897 to 9.48 per 1,000 full-time workers in 1908, an increase of 1.41 per 1,000 full-time workers. In the government plants, etc., there was a similar increase, though not so marked. The increase in the total rate was almost uninterrupted from 1897 to 1905, inclusive, but since 1905 there has been a tendency for the total rate to remain constant. The rates based on the average number of insured persons show practically the same tendency. The rates for government establishments, being based on a smaller number of insured persons, show wider fluctuations, but have the same general tendency. In other words, the total or general accident rate in German industries seems now to have reached a stationary point.

The items composing this total rate, however, indicate that there has been a marked decrease in the rate for serious accidents and that the increase is entirely due to a growth in the number of less serious accidents. The fatalities show a clear tendency to decrease, the rate in private establishments having decreased from 0.82 per 1,000 full-time workers in 1897 to 0.76 per 1,000 in 1908. Furthermore, the rate for permanent total disablements—the most expensive type of injury—has decreased from 0.12 per 1,000 full-time workers in 1897 to 0.07 per 1,000 in 1908, in private establishments. Likewise the rate for partial permanent disablements—which result in higher expenditures for compensation than fatal injuries—has also decreased; the rate for these injuries in private industrial establishments was 4.11 per 1,000 full-time workers in 1897, while in 1908 it had fallen to 3.70 per 1,000 full-time workers.

The increase in the general accident rate in German industries is therefore due entirely to the increase in the temporary disablements, that is, the injuries from which the workman eventually recovers. In 1897 there were 3.02 per 1,000 full-time workers in private undertakings who sustained injuries causing disability lasting longer than thirteen weeks; in 1908 this rate had increased to 4.95 per 1,000 full-time workers. If the workmen in German industries sustain a greater number of accidents at the present time than formerly, these accidents are much less serious in their consequences than was formerly the case.

This result is most probably due to the great care now exercised through the use of preventive measures such as protective appliances and stricter enforcement of rules of conduct. Mention should also be made of the elaborate surgical treatment now provided for injured persons; the German insurance system has demonstrated that by elaborate courses of treatment it is possible to restore the working capacity of injured persons to an extent hitherto unknown. Stiff joints which formerly made it impossible for a workman to engage in a trade, are now restored to usefulness; crushed fingers and arms which were formerly amputated are now carefully treated and made serviceable. In view of the great success attained by the Germans in this direction, it is a matter of regret that the recently enacted American laws on the compensation of industrial accidents pay almost no attention to this important phase of the subject.

It is of interest in this connection to present the data for the separate industry groups. The following table was derived from the special study of the accidents compensated in the year 1907 and because of the more accurate method of compilation used in this study, the decimal figures of the rates in some cases differ from those given in the annual reports which were used for the preceding tables, though otherwise the rates are the same.

TABLE IV.

NUMBER OF PERSONS KILLED OR INJURED PER 1,000 FULL-TIME WORKERS, BY INDUSTRY GROUPS, IN GERMANY, 1897-1907.

[Source: Amtliche Nachrichten des Reichs-Versicherungsamts, 1910. I Beiheft, I Teil. Gewerbe-Unfallstatistik für das Jahr 1907, pp. 18* to 23*.]

Association Number.	Industry, etc.	Number of Persons Killed or Injured per 1,000 Full-time (300 day) Workers in—										
		1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	**1907**
	A. TOTALS.											
	Grand total..........	8.08	8.18	8.47	8.54	9.16	9.13	*a*9.21	*a*9.41	*a*9.46	*a*9.38	**9.44**
	Industrial accident associations (not including institutes)..........	8.07	8.22	8.51	8.58	9.25	9.19	9.24	9.49	9.55	9.48	**9.58**
	Subsidiary institutes of building trades, engineering and navigation associations....	17.89	13.82	14.14	14.61	15.31	15.59	*a*17.06	*a*17.76	*a*14.92	*a*16.35	**16.57**
	Public authorities.....	6.79	6.82	7.13	7.11	7.24	7.41	7.66	7.20	7.42	7.16	**6.85**

(*a*) Not including subsidiary institute of the navigation accident association.

TABLE IV—*Continued.*

Association Number.	Industry, etc.	Number of Persons Killed or Injured per 1,000 Full-time (300 day) Workers in—										
		1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
	B. GROUPS OF ASSOCIATIONS.											
1	Mining	12.09	12.77	12.10	12.19	13.06	13.53	14.59	15.46	15.53	15.70	15.54
2	Quarrying	11.94	11.38	12.40	12.44	14.78	15.33	14.91	14.83	15.14	14.98	15.35
3	Fine mechanical products	5.38	5.51	5.14	5.26	6.78	5.89	5.82	6.43	7.08	6.68	6.64
4–11	Iron and steel	*b*8.92	*b*9.76	*b*10.05	*b*10.07	*b*11.39	11.45	11.25	11.62	11.45	11.55	11.62
12,13	Metal working	4.21	4.34	4.42	4.75	5.09	5.69	5.89	6.45	6.82	7.16	7.63
14	Musical instruments	3.96	4.35	5.04	4.94	5.26	5.33	5.11	5.34	5.37	5.04	6.92
15	Glass	4.07	4.31	4.87	4.19	4.77	4.28	4.92	4.89	5.08	4.68	4.46
16	Pottery	2.33	2.38	2.04	2.73	3.01	3.06	2.73	3.23	3.31	3.03	3.39
17	Brick and tile making	6.71	6.49	7.34	8.60	8.24	8.74	7.85	8.61	9.42	8.99	9.59
18	Chemicals	7.76	7.09	7.79	8.39	9.04	7.85	7.98	8.65	8.71	9.24	9.88
19	Gas and water works	5.14	5.39	5.20	5.42	6.10	5.94	6.96	6.78	6.44	6.23	6.45
20	Linen	4.49	4.17	5.16	4.32	4.49	4.65	3.80	4.52	3.97	4.91	4.76
27	Silk	1.26	1.54	1.41	1.64	1.69	1.31	1.36	1.44	1.46	1.30	1.29
20–27	Textiles including, linen and silk	3.25	3.13	3.34	3.45	3.21	3.01	3.04	3.00	3.07	3.07	3.00
28	Paper making	9.27	9.23	8.81	8.96	10.66	9.83	9.52	9.51	9.65	9.00	9.21
29	Paper products	3.39	3.19	3.28	3.58	3.45	3.16	3.41	3.53	4.08	3.81	3.81
30	Leather	5.23	5.98	4.96	6.06	6.66	6.15	6.53	6.45	6.51	6.36	7.14
31–34	Woodworking	11.77	12.07	13.00	12.93	13.35	12.35	12.41	12.68	13.05	13.19	12.28
35	Flour milling	13.51	13.32	14.43	13.83	14.49	14 96	15.67	16.18	16.24	15.72	16.06
36	Food products	6.79	5.29	5.86	5.97	6.40	6.33	5.71	5.99	5.69	5.39	6.27
37	Sugar	7.89	7.41	8.74	8.41	7.97	9.23	8.27	9.00	8.41	8.86	9.10
38	Dairying, distilling, and starch	7.67	7.96	9.01	7.57	8.22	8.36	7.38	8.33	8.68	8.02	8.10
39	Brewing and malting	11.31	10.87	11.21	12.17	11.88	11.88	12.78	13.22	13.08	11.93	13.05
40	Tobacco	.42	.43	.46	.61	.54	.59	.65	.53	.48	.56	.49
41	Clothing	2.18	2.67	2.65	2.70	3.29	2.72	2.85	3.07	2.67	2.88	2.81
42	Chimney sweeping	6.14	5.50	5.14	4.48	4.42	5.27	5.39	5.27	5.27	4.71	5.98
43–54	Building trades (not including institute)	11.04	10.77	10.92	10.72	11.44	12.16	11.34	11.24	11.04	10.77	11.22
55	Printing and publishing	2.66	2.05	2.31	2.66	2.52	2.84	2.48	2.45	3.12	3.16	3.02
56	Private railways	5.86	4.61	5.72	4.53	5.37	6.26	6.68	5.65	5.78	6.57	5.56
57	Street and small railroads	5.14	5.65	7.07	6.58	8.00	8.36	7.99	7.13	7.60	7.45	6.98
58	Express and storage	12.36	12.19	13.95	14.15	14.52	13.90	13.57	11.62	12.53	12.23	11.34
59	Livery, drayage, cartage, etc.	16.97	18.14	16.50	15.11	20.11	20.22	24.12	22.68	25.31	24.14	26.61
60–62	Inland navigation	11.35	10.70	11.73	11.74	13.84	12.97	13.69	15.02	14.31	14.11	11.82
63	Marine navigation (not including institute)	8.95	8.01	9.02	8.00	7.30	7.67	6.49	6.72	6.50	6.70	6.22
64	Engineering, excavating, etc. (not including institute)	11.85	12.38	12.82	12.82	13.87	16.61	16.24	15.17	14.74	12.74	12.95
65	Meat products	7.03	7.13	8.08	7.66	10.05	9.19	9.90	10.17	10.02	8.90	8.80
66	Blacksmithing, etc.	(*c*)	(*c*)	(*c*)	(*c*)	(*c*)	3.61	5.89	8.77	7.79	8.63	7.87
	C. PUBLIC AUTHORITIES.											
	Establishments of the naval administration	5.91	6.55	7.58	10.56	9.54	10.28	9.47	6.35	4.69	4.80	5.39
	Establishments of the military administration	5.82	6.01	6.13	4.69	4.22	5.40	6.01	4.81	4.37	4.22	4.00
	Postal and telegraph administration	5.66	4.89	5.19	6.23	5.45	4.91	4.24	3.36	4.06	3.70	3.21
	Railway administration	7.03	7.06	7.33	7.33	7.48	7.68	7.82	7.63	8.14	7.71	7.23
	Dredging, towing, etc.	11.56	9.31	12.65	10.80	14.01	12.99	10.94	13.15	15.75	11.85	12.13
	Building operations (States and Empire)	6.59	6.50	7.65	7.03	8.42	8.11	8.55	7.78	7.17	7.39	7.90
	Marine navigation	9.03	3.98	7.29	9.74	11.86	12.20	22.47	6.70	3.33	8.10	1.46
	Building operations of local governments	5.99	6.26	5.84	5.92	6.04	5.81	7.58	6.87	6.19	7.18	7.43

(*b*) Including blacksmithing, etc. (Association 66).
(*c*) Included in Associations 4–11.

According to the preceding table there are nine industry groups which had a general accident rate per 1,000 full-time workers which was higher in 1907 than at any time during the preceding five years; these groups are quarrying, metal working, musical instrument making, pottery, brick and tile making, chemicals, leather, chimney-sweeping, and livery, drayage, etc. In only two of these groups, namely, musical instrument making and livery, drayage, etc., did the 1907 rate exceed the highest previous rate by more than one per 1,000 full-time workers; in the musical instrument group the rate for 1907 was 1.55 per 1,000 full-time workers higher than in any previous year and in the livery, drayage, etc., group the 1907 rate was 1.30 per 1,000 full-time workers higher than in any previous year. It should be stated, however, that both of these groups include only small numbers of workmen.

On the other hand some of the most important groups show lower rates in 1907 than in any of the five years preceding; these include the groups private railways, street and small railways, express and storage, inland navigation, marine navigation and meat products. It is also noteworthy that the group engineering, excavating, etc., with the exception of the year 1906, had a lower rate in 1907 than in any of the preceding five years. Most of the groups just mentioned are industries in which a high accident rate is the rule.

The increase in the general accident rate has been the cause of no little concern to the officials of the accident insurance system. The special study of the accidents compensated in 1907 refers to a circular letter which was sent to each accident association, asking for an expression of opinion as to what were the causes of this increase. The returns showed that the increase was principally due to the following causes: Stricter control in regard to reporting accidents, employment of untrained and inexperienced workmen, more frequent prosecution of claims by the injured persons because of their better knowledge of the law, better knowledge of the literal definition of what is an "industrial accident," increase of the cases in which the officials of the insurance system admitted a causal connection between an existing malady or weakness and its aggravation by an accident, the frequent granting of a transitory or "accustoming" pension in cases where strictly speaking there was no longer a loss of earning power, and finally the frequency of changes in the personnel of the labor force of the plant.

The reply of the mine-owners' association (*Knappschafts-Berufsgenossenschaft*), contained the following statement of what they as employers considered the leading causes of this increase:

1. The workmen have become more and more familiar with the accident insurance system, though this cause applies more accurately to the first 15 years of the insurance, up to about 1900, than for the later period.
2. The insured persons are more and more disposed to report or connect previous pathological conditions as being due to a real or supposed accident; in mining work, it is extremely easy for the insured persons to find some incident which preceded their disease and to connect this incident with the disability. In a number of cases the insured persons have resorted to trickery to obtain an accident pension.
3. More and more the workmen seek to obtain compensation for every accident regardless of how insignificant it may be. The result of this is that the officials are induced to report as accidents trifling incidents which would not otherwise have been reported at all.
4. The careful control to which the reporting of industrial accidents is subjected.
5. The more intense methods of working in the industry.
6. The increasing use of machinery.
7. The increasing use of foreign workmen.
8. The more frequent employment of inexperienced workmen, who, because of the lack of apprenticeship, are not familiar with mining work and its dangers.
9. The rapid change in the personnel of the workmen has developed to an unexpected extent.
10. The unwise manner of living of many of the workmen, which diminishes their mental capacity and their physical powers of resistance.
11. The failure to observe the rules for the prevention of accidents and the regulations of the mining inspectors.*

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*Bulletin du Comité Permanent des Congrès Internationaux des Assurances Sociales, 1908.

To sum up the German experience, it may be said that from 1897 to 1905 there was a steady increase in the general or total accident rate, but that since 1905 this rate has shown a tendency to remain constant. Since there has been a decrease in the serious injuries, this means that the minor injuries are still increasing, as the tables given above indicate.

AUSTRIA.

The statistics of accidents in Austria are, as in the case of Germany, derived from the operations of the accident insurance system. In order to make clear the basis of the statistical information it should be stated that in Austria the accident insurance system is administered by a series of territorial organizations including all the industries in their area except the railways, and mining which have separate organizations. A series of sick funds provides the benefits for the first four weeks of disability, after which the disabled workman is transferred to the care of the accident insurance institutes. The German figures, it will be remembered, relate only to accidents causing either death or disability for more than thirteen weeks; the Austrian figures, therefore, show much higher rates than the German returns. The term "full-time" worker has the same meaning as in the case of the German statistics.

The following tables show the scope of the Austrian accident insurance system and the development of the general accident rate from 1890 to 1907.

TABLE V.

NUMBER OF ACCIDENTS AND NUMBER PER 10,000 FULL-TIME WORKERS IN AUSTRIA, 1890-1907.

[Source: Amtliche Nachrichten betr. Unfall- und Krankenversicherung, 1907-1909.]

Year.	Number of Full-time Workers Insured.	Accidents Compensated.						Accidents for Which Compensation was not Paid (Disability not Lasting Four Weeks, etc.).	
		Fatal.		Non-fatal.		Total.			
		Number.	Number per 10,000 Insured Full-time Workers.	Number.	Number per 10,000 Insured Full-time Workers.	Number.	Number per 10,000 Insured Full-time Workers.	Number.	Number per 10,000 Insured Full-time Workers:
1890	823,166	548	6.7	6,193	75.2	6,741	81.9	9,300	113.0
1891	857,284	565	6.6	8,219	95.9	8,784	102.	12,532	146.2
1892	893,882	574	6.4	8,348	99.0	9,422	105.4	16,876	188.8
1893	940,943	649	6.9	10,252	109.0	10,901	115.9	22,016	234.0
1894	989,987	670	6.8	11,882	120.0	12,552	126.8	27,707	279.9
1895	1,216,731	835	6.8	15,560	127.9	16,395	134.7	38,167	313.7
1896	1,286,433	929	7.2	17,615	137.3	18,544	144.5	46,159	357.3
1897	1,331,957	929	7.0	18,732	140.6	19,661	147.6	49,622	372.5
1898	1,395,710	977	7.0	19,999	143.3	20,976	150.3	54,170	388.1
1899	1,438,584	1,044	7.3	21,622	150.3	22,666	157.5	56,594	393.4
1900	1,462,350	1,003	6.8	22,036	150.7	23,039	157.5	57,495	393.2
1901	1,481,857	995	6.7	23,139	156.2	24,134	162.9	57,471	347.8
1902	1,483,293	901	6.1	24,412	164.6	25,313	170.7	58,690	395.7
1903	1,518,518	909	6.0	24,550	161.7	25,459	167.7	62,696	412.8
1904	1,609,208	1,037	6.4	26,575	165.2	27,612	171.6	72,132	448.2
1905	1,645,423	1,111	6.8	27,676	168.2	28,787	175.0	74,948	455.4
1906	1,726,824	1,089	6.3	30,380	175.9	31,469	182.2	77,649	449.7
1907	1,824,939	1,189	6.5	32,303	177.0	33,492	183.5	85,560	468 8

TABLE VI.

NUMBER OF ACCIDENTS REPORTED PER 10,000 FULL-TIME WORKERS, BY RESULTS OF ACCIDENTS IN AUSTRIA, 1890–1907.

[Source: Amtliche Nachrichten betr. Unfall-und Krankenversicherung, 1894–1909.]

Year.	Number of Full-time Workers Insured.	Accidents per 10,000 Full-time Workers Insured.			
		Number Reported.	Number Compensated.		
			Temporary Disability Lasting more than Four Weeks.	Permanent Disability.	Death.
1890	823,166	194.9	55.9	19.3	6.7
1891	857,284	248.6	70.8	25.1	6.6
1892	893,882	294.2	70.7	28.3	6.4
1893	940,943	349.8	74.5	34.5	6.9
1894	989,987	406.7	82.6	37.4	6.8
1895	1,216,731	448.4	87.4	40.5	6.8
1896	1,286,433	503.8	95.2	42.1	7.2
1897	1,331,957	520.2	102.7	37.9	7.0
1898	1,395,710	538.5	105.5	37.8	7.0
1899	1,438,584	551.0	108.6	41.7	7.3
1900	1,462,350	550.7	109.9	40.8	6.8
1901	1,481,857	550.7	113.4	42.8	6.7
1902	1,483,293	566.4	124.7	39.9	6.1
1903	1,518,518	580.5	126.7	35.0	6.0
1904	1,609,208	619.8	124.9	40.3	6.4
1905	1,645,423	630.4	(*a*) 168.2	(*b*)	6.8
1906	1,726,824	631.9	(*a*) 175.9	(*b*)	6.3
1907	1,824,939	652.3	(*a*) 177.0	(*b*)	6.5

(*a*) Including accidents resulting in permanent disability.
(*b*) Included in accidents resulting in temporary disability.

The total accident rate for Austria shows, according to Table V, an uninterrupted increase for the whole period 1890 to 1907, though the year 1900 has the same rate as 1899. The fatal accidents compensated have practically remained stationary since 1899, while the non-fatal accidents compensated have, with the exception of the year 1903, shown an increase in each year over the preceding year. Table VI indicates that in the five-year period, 1900 to 1904, there is a tendency for the permanent disablements to diminish.

The annual reports of the Austrian accident insurance system show the rates for compensated accidents for the various industries in a form which is slightly different from the table just given; the data show first the total number of accidents reported, which includes fatal and non-fatal accidents and accidents causing disability of less than four weeks, as well as those causing death or disability of more than four weeks. The groups of industries are given in such detailed form that to present the tables for the period 1897 to 1907 would require more space than is available at present, while the detailed classification has made the basis of computation so small that the rates based on the total number of insured persons fluctuates widely from year to year. One group, the building and construction industries, however, shows such a marked variation from the general tendency that the rates are of interest. The following table shows this group and the total for all of the sixteen groups:*

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* The data for the 16 groups will be found on papes 97 to 111 of the Twenty-fourth Annual Report of the United States Commissioner of Labor.

TABLE VIII.

NUMBER OF ACCIDENTS PER 10,000 FULL-TIME WORKERS, IN THE BUILDING INDUSTRIES AND IN ALL GROUPS OF INDUSTRIES, IN AUSTRIA, 1894–1907.

[Source: Amtliche Nachrichten betr. Unfall-und Krankenversicherung, 1898-1909.]

Industry Group and Year.	Number of Insured Full-time Workers.	Accidents per 10,000 Full-time Workers Insured.		
		Number Reported.	Number Compensated and Resulting in—	
			Disability of more than Four Weeks.	Death.
XIV (*a*). Building, Construction Operations, etc.:				
1894	84,946	799.0	218.2	19.7
1895	96,244	950.3	234.4	12.1
1896	115,731	873.6	233.3	12.3
1897	119,986	1,056.1	247.0	11.8
1898	135,488	1,044.6	242.2	13.0
1899	139,906	945.7	223.9	12.6
1900	131,483	915.5	225.6	11.8
1901	124,780	956.2	236.6	11.4
1902	134,018	1,027.0	254.7	11.0
1903	145,842	1,005.5	251.1	10.3
1904	180,730	978.7	245.2	12.4
1905	172,375	946.0	252.3	12.2
1906	161,849	830.9	237.0	11.2
1907	164,593	801.0	228.2	11.1
XIV (*b*). Building Trades:				
1894	25,245	746.3	267.4	19.8
1895	26,477	793.1	303.7	26.4
1896	29,358	814.7	298.0	26.9
1897	28,801	804.5	286.4	27.1
1898	33,007	853.5	269.0	20.0
1899	31,386	839.5	290.3	19.4
1900	28,634	865.7	311.5	19.9
1901	27,995	917.3	306.5	20.7
1902	28,656	921.6	347.9	15.4
1903	30,144	932.8	318.1	18.9
1904	32,841	965.2	322.4	23.8
1905	32,085	803.8	300.5	21.2
1906	35,556	790.3	298.4	7.2
1907	40,992	749.7	284.0	15.8
XIV (*c*). Trades Subsidiary to Building Trades:				
1894	7,330	612.6	165.1	16.4
1895	7,143	879.2	146.4	11.2
1896	8,943	903.3	218.0	19.0
1897	9,682	918.2	204.5	10.3
1898	11,108	919.2	211.6	14.4
1899	12,728	832.0	199.5	9.5
1900	14,524	906.1	212.1	13.5
1901	14,808	913.0	195.2	12.1
1902	15,834	919.5	222.3	4.4
1903	15,504	978.5	235.4	11.6
1904	16,642	978.9	222.5	9.0
1905	18,793	818.4	195.8	8.0
1906	24,070	637.3	194.0	5.0
1907	36,786	446.4	153.3	7.6

TABLE VIII—*Continued.*

Industry Group and Year.	Number of Insured Full-time Workers.	Accidents per 10,000 Full-time Workers Insured.		
		Number Reported.	Number Compensated and Resulting in—	
			Disability of more than Four Weeks.	Death.
XIV (*d*). Establishments for Cleaning, Maintenance, etc., of Buildings:				
1895	3,491	601.9	253.5	27.8
1896	3,481	588.6	212.0	23.4
1897	3,711	741.4	247.3	31.9
1898	3,819	580.3	171.9	11.4
1899	4,170	574.9	171.0	37.3
1900	4,492	285.0	102.4	17.8
1901	4,680	566.2	119.7	6.4
1902	4,933	316.2	103.4	8.1
1903	5,095	325.8	109.9	7.9
1904	5,097	306.1	102.0	13.7
1905	5,004	325.7	145.9	2.0
1906	5,400	348.1	111.1	9.3
1907	5,050	358.4	118.8	4.0
All Groups of Industries (Groups I to XVI):				
1894	989,987	406.7	120.0	6.8
1895	1,216,731	448.4	127 9	6.8
1896	1,283,433	503.8	137.3	7.2
1897	1,331,957	520.2	140.6	7.0
1898	1,395,710	538.5	143.3	7.0
1899	1,438,584	551.0	150.3	7.3
1900	1,362,350	550.7	150.7	6.8
1901	1,481,857	550.7	156.2	6.7
1902	1,483,293	566.4	164.6	6.1
1903	1,518,518	580.5	161.7	6.0
1904	1,609,208	619.8	165.2	6.4
1905	1,645,423	630.4	168.2	6.3
1906	1,726,824	631.9	175.9	6.8
1907	1,824,939	652.3	177.0	6.5

In general, it may be said that the building trades groups show a tendency to have a decreasing accident rate in the last five years of the period included in the preceding table. Practically no other group shows such a tendency. A careful search of the official reports discloses no mention of the cause for this variation. With this one exception therefore, it must be concluded that a stationary or diminishing accident rate has not yet been reached in Austria.

GREAT BRITAIN.

The increase in the number of industrial accidents in British industries in recent years had been so marked that on June 4, 1908, a motion was made in the House of Commons

> "That this House is of opinion that the increase in fatal and non-fatal accidents in places under the Factory and Workshops Act is of such a character as to demand immediate attention, more particularly in so far as it bears upon the organization of the Factory Department of the Home Office."

The debate on this motion led to the appointment of a Departmental Committee to consider the question of the increase in reported accidents; the report of this committee, together with a large volume containing the testimony collected, is now available* and is the authority for the data given below.

The committee states that the rise in the number of reported accidents had been the cause of disquietude for some years; the number of reported accidents had risen from 79,020 in 1900 to 100,609 in 1905, while for the years 1905 to 1907 the figures were:

	Total.	Fatal.
1905	100,609	1,063
1906	111,904	1,116
1907	124,325	1,179

Before taking up the study of the accident data, it is necessary to explain briefly the peculiarities of the British figures. The Notice of Accidents Act of 1906 classifies accidents into two groups:—Class A (*i. e.*, accidents reportable both to the certifying surgeon and the inspector), accidents due to power driven machinery, hot liquid, explosions of gas or steam, or to electricity, which cause absence from work throughout one whole day; and Class B (*i. e.*, accidents reportable to inspectors only), accidents causing absence from work for more than seven days. The Class A accidents are those which are caused by some dangerous appliance and usually call for some administrative action (inspection of safety appliances, etc.), while the Class B accidents are all other accidents of a somewhat serious nature. The following table indicates that the Class A accidents in the last five years form about one third of the total number reported. The total reported accidents have been much higher in the five years 1905 to 1909, than in any preceding year, but during the last three years there has been in each year a decrease. The number of all reported accidents for the period 1890 to 1909 is as follows:

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*Great Britain. Home Office. Report of the Departmental Committee on Accidents in Places Under the Factory and Workshop Acts. London, 1911. 2 vols.

TABLE VIII.

ALL REPORTED ACCIDENTS IN GREAT BRITAIN, 1890–1909.

[Source: Report of the Departmental Committee on Accidents, 1911, p. 3.]

Year.	Reported to							Total.
	Certifying Surgeons and Inspectors.						Inspectors only.	
	Factories and Workshops.		Other Premises (*b*).		Total.			
	Non-fatal and Fatal.	Fatal.	Non-fatal and Fatal.	Fatal.	Non-fatal and Fatal.	Fatal.		
1890 (*a*)	8,211	484	—	—	8,211	484	—	8,211
1891 (*a*)	8,527	420	—	—	8,527	420	—	8,527
1892 (*a*)	8,643	420	—	—	8,643	426	—	8,643
1893 (*a*)	8,186	422	—	—	8,186	422	—	8,186
1894 (*a*)	9,749	448	—	—	9,749	448	—	9,749
1895	10,466	455	—	—	10,466	455	—	10,466
1896	14,164	525	269	71	14,433	596	19,124	33,557
1897	15,446	516	539	142	15,985	658	24,489	40,474
1898	18,493	577	734	190	19,227	727	38,335	57,562
1899	21,556	681	1,215	180	22,771	871	47,989	70,760
1900	25,970	813	1,734	282	27,704	1,045	51,316	79,020
1901	27,215	782	2,052	253	29,267	1,035	54,493	83,760
1902	27,748	850	2,328	360	30,076	1,110	60,279	90,355
1903	28,122	748	2,387	299	30,509	1,047	62,091	92,600
1904	27,574	727	2,387	291	29,961	1,018	63,007	92,969
1905	29,538	775	2,464	288	32,002	1,063	68,607	100,609
1906	32,902	799	2,794	317	35,696	1,116	76,208	111,904
1907	40,310	850	3,168	329	43,478	1,179	80,847	124,325
1908	39,643	767	2,258	275	41,901	1,042	80,253	121,112
1909	37,883	700	2,083	246	39,966	946	77,534	117,500

Unfortunately the British figures supply information on which an accident rate can be computed only to a limited degree. Under the provisions of the Factory Act, the total number of persons employed in a factory must be reported every three years. The report of the committee states "We understand that these returns are not very reliable. In a

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(*a*) Twelve months ended October 31st.

(*b*) Docks, buildings, and other premises added by the Act of 1895.

large proportion of cases occupiers neglect to fill up the return when the form is sent to them. In the case of textile factories a second demand is made; as regards other factories the . . . department is unable . . . to do this. When no return is sent from a factory and the figures of a previous return are available, these figures are used. As regards docks, warehouses, and building operations, there are no returns of employment under the factory act." With this reservation as to the accuracy of the figures, the following table shows the accident rate per 1,000 persons employed in the textile and in certain non-textile industries:

TABLE IX.

RATES PER 1,000 EMPLOYED OF ALL ACCIDENTS IN CERTAIN FACTORY INDUSTRIES, 1898, 1901, AND 1904 IN GREAT BRITAIN.

[Source: Report of Departmental Committee on Accidents, 1911, p. 5.]

INDUSTRY.	1898.	1901.	1904.
Textile	5.0	6.8	6.4
Cotton	6.1	8.1	7.4
Wool, worsted, shoddy	4.8	6.1	6.0
Non-Textile	15.5	20.9	23.8
Metals	21.1	32.3	40.9
Extraction	22.0	34.5	48.1
Founding and conversion	21.2	35.9	42.2
Machines, appliances, conveyances, tools	29.7	38.8	42.1
Shipbuilding	52.4	72.4	76.7
Wood, etc	14.9	19.2	25.6
Paper, etc.	6.2	7.5	8.3
Laundries	(*a*)	5.8	5.3

The textile factories show a slight tendency to have a lower rate in 1904 as compared with 1901; all of the non-textile factories show a higher rate in 1904 than in 1901 and 1898, while the laundries have a lower reported rate in 1904 than in 1901.

The rates for accidents reported because they were occasioned by some dangerous appliance (Class A accidents) and designated as those reported to the certifying surgeons, are as follows:

(*a*) Not reported.

TABLE X.

RATES PER 1,000 EMPLOYED OF ACCIDENTS REPORTED TO CERTIFYING SURGEONS IN CERTAIN FACTORY INDUSTRIES IN 1898, 1901, 1904, AND 1907 IN GREAT BRITAIN.

[Source: Report of Departmental Committee on Accidents, 1911, p. 6.]

INDUSTRY.	1898.	1901.	1904.	1907.
Textile	3.7	4.6	4.0	6.0
Cotton	4.5	5.3	4.4	6.8
Wool, worsted, shoddy	3.7	4.4	4.2	5.7
Non-textile	5.3	7.2	7.6	9.9
Metals	7.3	12.3	14.7	21.6
Extraction	7.7	11.5	14.7	22.7
Founding and conversion	6.9	13.7	15.1	23.7
Machines, appliances, conveyances, tools	7.8	9.6	10.2	13.3
Shipbuilding	5.8	8.0	8.3	11.9
Wood, etc	10.2	12.7	16.9	21.7
Paper, etc,	4.0	5.0	5.0	5.8
Laundries	?	4.7	4.2	4.2

With the exception of the laundries, there is an increase, and in some cases a conspicuous increase, in the rates in 1907 of the accidents reported as compared with the years preceding.

The information as to the total number of persons employed is given for 1907 only in connection with the accidents caused by a dangerous appliance (Class A accidents) and is as follows:

TABLE XI.

RATES PER 1,000 EMPLOYED OF ACCIDENTS REPORTED TO CERTIFYING SURGEONS IN CERTAIN FACTORY INDUSTRIES IN 1898, 1901, 1904, AND 1907 IN GREAT BRITAIN.

[Source: Report of the Departmental Committee on Accidents, 1911, p. 6.]

INDUSTRY.	1898.	1901.	1904.	1907.
Textile	3.7	4.6	4.0	6.0
Cotton	4.5	5.3	4.4	6.8
Wool, worsted, shoddy	3.7	4.4	4.2	5.7
Non-textile	5.3	7.2	7.6	9.9
Metals	7.3	12.3	14.7	21.6
Extraction	7.7	11.5	14.7	22.7
Founding and conversion	6.9	13.7	15.1	23.7
Machines, appliances, conveyances, tools	7.8	9.6	10.2	13.3
Shipbuilding	5.8	8.0	8.3	11.9
Wood, etc	10.2	12.7	16.9	21.7
Paper, etc	4.0	5.0	5.0	5.8
Laundries	(a)	4.7	4.2	4.2

Except for the laundries, the rate of reported accidents for all the industries in the preceding table is higher in 1907 than in 1904.

(a) Not reported.

It has been the general experience that with the enactment of compensation laws, an immediate increase in the number of reported accidents takes place. The reason is obvious; unless the injured workman files a claim, he receives no benefits under the law, and as it is often impossible to know what will be the result of an injury, it is clearly to his advantage to report even trivial injuries, while if the employer carries some form of accident insurance, it is likewise important for him to provide the basis of a claim in all cases. The returns made under the workmen's compensation act of 1906 indicate that this has taken place in Great Britain.

The act of 1906 provides that employers in such industries as the secretary of state may by order direct shall make returns "of the number of injuries in respect of which compensation has been paid, the amount of compensation and such other particulars as may be required." The following table is compiled from these returns:

TABLE XII.

SHOWING NUMBER OF INJURIES COMPENSATED UNDER THE WORKMEN'S COMPENSATION ACT IN CERTAIN INDUSTRIES IN 1908 AND 1909 IN GREAT BRITAIN.

[Source: Report of the Departmental Committee on Accidents, 1911, p. 7.]

INDUSTRY.	Average Number of Persons Employed.		Number of Accidents Compensated.		Proportion per 1,000 Persons Employed.	
	1908.	1909.	1908.	1909.	1908.	1909.
Shipping	235,001	236,000	6,248	7,067	26.6	29.9
Factories—						
Cotton	549,666	549,856	7,963	9,201	14.5	16.7
Wool	320,656	266,447	2,000	2,333	6.2	8.8
Other textiles	283,169	274,778	1,892	2,057	6.7	7.5
Wood	228,875	115,213	5,323	5,148	23.3	44.7
Metals	431,447	343,275	24,668	23,109	57.2	67.3
Engine Building	251,403	191,033	18,695	12,435	74.4	65.1
Other Metals	966,899	728,256	32,589	24,656	33.7	33.9
Paper, etc	342,813	308,365	3,326	3,296	9.7	10.6
China	53,875	69,146	1,101	1,031	20.4	14.9
Miscellaneous	2,069,186	1,739,486	39,751	40,612	19.2	23.3
Total Factories	5,497,988	4,585,855	137,308	123,878	25.0	27.0
Docks	67,929	130,886	10,747	11,790	158.2	90.1
Mines	1,047,862	984,994	138,923	156,254	132.6	158.6
Quarries	85,475	88,880	5,372	5,619	62.8	63.2
Constructional Work	127,106	92,298	6,924	7,350	54.5	79.6
Railways	451,392	437,752	21,149	20,649	46.8	47.2
Grand total	7,512,753	6,566,622	326,671	332,607	43.5	50.7

It may be noted that the number of accidents compensated is higher in 1908 (see Table XII) than the number of persons reported as injured in 1907 (see Table VIII). The number of persons compensated per 1,000 employees is also higher in 1909 than in 1908, though for three of the groups, engine-building, china factories, and docks, the reverse is true.

The preceding tables indicate in the first place, that there has been a tendency for the number of accidents reported to increase steadily up to the year 1907 and that there was a decrease in the reported accidents in 1908 and 1909; in the second place that the number of accidents compensated in 1908 was higher than the number of accidents reported in 1907; and in the third place that the compensated accidents were more numerous in 1909 than in 1908. The figures therefore show a general tendency to an increase in the number of accidents from 1890 to 1909.

As to whether this increase in the accident rate represents an actual increase in the number of accidents or is merely the result of more careful reporting, the committee comes to the conclusion that the latter is the principal cause. The reasons given are the following:

First, while the total number of accidents reported has tended to increase, the number of fatal and serious accidents which are always more carefully reported than the minor accidents, has tended to remain stationary. "It is possible that minor accidents may have increased at a greater rate than serious accidents and in the present state of our knowledge it is impossible to speak with certainty on the point. No reason, however, for so large a difference between the rates of increase in serious and in minor accidents has been given and the committee infer that most of the difference is due to the fuller reporting of minor accidents." Second, the factory inspectors all stated that reporting had been defective in the past and that improvements in this respect had been instituted. Third, the compensation act of 1906 had led to more complete reporting. Fourth, the amendment of the accident reporting law in 1906 had also led to more complete reporting. The general conclusion of the committee (page 21) is that "the increase of reported accidents up to 1907 was due almost entirely to increased reporting."

The committee also takes up the question as to whether industries as at present conducted have a greater degree of risk—are more hazardous—than formerly. The elements considered in the report are the following:

First, increased speed and pressure of work—"on the whole, we are of opinion that there is increased speed and pressure in a large number of industries, and this is probably a cause operating to produce an appreciable increase in the accident risk."

Second, increased use of machinery,—"considered as an isolated cause, is one of the causes operating to increase the accident risk. The counter operation, however, due to improvements in machines and in guards must not be forgotten."

Third,—the workmen's compensation act,—"the committee conclude that the workmen's compensation act has reduced the accident risk by directing the attention of employers to the occurrence of accidents and the importance of preventing them, but has led to some increase in the number of reported accidents. . . ."

Fourth, improvements in guarding machinery,—"an appreciable decrease in the accident risk has occurred as a result of improvement in the guarding of machinery."

Fifth, casual or intermittent labor—"we have no evidence that this is a cause of increased accident risk."

Sixth, unskilled labor—"generally . . . we have little evidence of an increase in the use of unskilled labor on dangerous processes except as regards the employment of young persons. . . ."

Seventh, employment of young persons—"so far as the employment of young persons has increased, the risk which naturally accompanies the employment of immature workers has also increased, but the committee do not think that this cause accounts for any large proportion of the total increase in the accident risk."

Eighth, blood poisoning—"there is evidence of an increase of cases of incapacitation from this cause, for which increase no satisfactory reason has been suggested to us."

The general conclusion of the committee is that in British industries the accident risk for the ten years 1897 to 1907 has probably remained "almost constant," and that any increase due to the greater use of machinery and greater pressure on the workmen has been counteracted by improved inspection and the greater care on the part of the employers resulting from the provisions of the workmen's compensation act. The committee asserts that "There has been little, if any, increase in the accident risk during recent years."

General Conclusion.

In Germany, Austria, and Great Britain the serious accidents, namely those causing death or permanent disablement, show a tendency to decrease. In Germany and Austria, the accidents which cause disablements from which the workman eventually recovers, show a tendency to increase, there being no information on this point for Great Britain. In Germany there has been an elaborate, persistent campaign for at least a decade for the purpose of reducing the accident risk and in this period the number of accidents of the type which may be called "minor," has steadily increased. The progress in the movement for reducing the risk of industry, therefore, has resulted in distinctly reducing the risk of death or permanent disablement, but has not yet diminished the risk of temporary disablement.